

# GHS

Compliance  
Toolkit



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# Introduction

On March 26, 2012, the Occupational Safety and Health Administration (OSHA) issued a final rule modifying its Hazard Communication Standard (HCS). The final rule aligns the HCS with the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

OSHA's intent in revising the standard is to improve the effectiveness of the HCS by ensuring that employees are informed of the chemical hazards to which they may be exposed and, consequently, to reduce the number of chemical-related occupational illnesses and injuries.

The revised standard takes effect in stages, beginning in December 2013. The table below summarizes the phase-in dates required under the revised HCS.

Effective Completion Date	Requirement(s)	Who
Dec. 1, 2013	Train employees on the new label elements and safety data sheet (SDS) format.	Employers
June 1, 2015  Dec. 1, 2015	Compliance with all modified provisions of this final rule, except:  The distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label.	Chemical manufacturers, importers, distributors and employers
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.	Employers
Transition period to the effective completion dates noted above	May comply with either 29 CFR 1910.1200 (the final standard), the current standard or both.	Chemical manufacturers, importers, distributors and employers

This GHS Compliance Toolkit is divided into two sections. The first section contains information designed to help employers understand and comply with OSHA's revised Hazard Communication Standard. The second section contains a variety of training materials employers can use to educate employees on the new label elements and safety data sheet (SDS) format.

The GHS Compliance Toolkit is merely a guide. It is not meant to be exhaustive nor be construed as legal advice. It does not address all potential compliance issues with federal, state, local OSHA or any other regulatory agency standards. Consult your licensed Commercial Property and Casualty representative at Campbell Insurance or legal counsel to address possible compliance requirements.

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# GHS Implementation Timeline

**Oct. 25, 2011**

OSHA sends Office of Management and Budget final rule for approval.

**Dec. 1, 2013**

Employers must have employees trained on new label elements and safety data sheet formats.

**Dec. 1, 2015**

Chemical distributors can no longer ship containers that do not have updated labels (new or modified per the statute).

2011

2012

2013

2014

2015

2016

**March 26, 2012**

Final rule is published in the Federal Register; employers are permitted to continue following old rule during the transition period.

**June 1, 2015**

Chemical manufacturers, importers, distributors and employers must be producing new labels and data sheets.

**June 1, 2016**

Employers must have all workplace labeling compliant with the GHS standard, and any additional employee training on physical or health hazards completed.

# Changes to the HCS

The new HCS still requires chemical manufacturers and importers to evaluate the chemicals they produce or import, and to provide hazard information to employers and workers by putting labels on containers and preparing safety data sheets.

However, the old standard allowed chemical manufacturers and importers to convey hazard information on labels and material safety data sheets in whatever format they chose. The modified standard provides a single set of harmonized criteria for classifying chemicals according to their health and physical hazards and specifies hazard communication elements for labeling and safety data sheets.

Major changes include the following:

**Hazard classification:** Chemical manufacturers and importers are required to determine the hazards of the chemicals they produce or import. Hazard classification under the new, updated standard provides specific criteria to address health and physical hazards as well as classification of chemical mixtures.

**Labels:** Chemical manufacturers and importers must provide a label that includes a signal word, pictogram, hazard statement and precautionary statement for each hazard class and category.

**Safety Data Sheets:** The new format requires 16 specific sections, ensuring consistency in presentation of important protection information.

**Information and training:** To facilitate understanding of the new system, the new standard requires that workers be trained by Dec. 1, 2013, on the new label elements and safety data sheet format, in addition to the current training requirements.

# Dec. 1, 2013 Training Requirements

The first compliance date of the revised HCS is Dec. 1, 2013. By that time employers must have trained their workers on the new label elements and the SDS format. This training is needed early in the transition process since workers are already beginning to see the new labels and SDSs on the chemicals in their workplace. To ensure employees have the information they need to better protect themselves from chemical hazards in the workplace during the transition period, it is critical that employees understand the new label and SDS formats.

The list below contains the minimum required topics for the training that must be completed by Dec. 1, 2013.

## Training on label elements must include information on:

- The type of information the employee would expect to see on the new labels, including:
  - **Product identifier**—how the hazardous chemical is identified. This can be (but is not limited to) the chemical name, code number or batch number. The manufacturer, importer or distributor can decide the appropriate product identifier. The same product identifier must be both on the label and in Section 1 of the SDS (Identification).
  - **Signal word**—indicates the relative level of severity of hazard and alert the reader to a potential hazard on the label. There are only two signal words: “Danger” and “Warning.” Within a specific hazard class, “Danger” is used for the more severe hazards, and “Warning” is used for the less severe hazards. There will only be one signal word on the label no matter how many hazards a chemical may have. If one of the hazards warrants a “Danger” signal word and another warrants the signal word “Warning,” then only “Danger” should appear on the label.
  - **Pictogram**—OSHA’s required pictograms must be in the shape of a square set at a point and include a black hazard symbol on a white background with a red frame sufficiently wide enough to be clearly visible. A square red frame set at a point without a hazard symbol is not a pictogram and is not permitted on the label. OSHA has designated eight pictograms under this standard for application to a hazard category.
  - **Hazard statement(s)** describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard. For example: “Causes damage to kidneys through prolonged or repeated exposure when absorbed through the skin.” All of the applicable hazard statements must appear on the label. Hazard statements may be combined where appropriate to reduce redundancies and improve readability. The hazard statements are specific to the hazard classification categories, and chemical users should always see the same statement for the same hazards, no matter what the chemical is or who produces it.
  - **Precautionary statement(s)**—phrases that describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling.
  - **Name, address and phone number** of the chemical manufacturer, distributor, or importer

- How an employee might use the labels in the workplace. For example, training should:
  - Explain how information on the label can be used to ensure proper storage of hazardous chemicals.
  - Explain how the information on the label might be used to quickly locate information on first aid when needed by employees or emergency personnel.
- A general understanding of how the elements work together on a label. For example, training should:
  - Explain that where a chemical has multiple hazards, different pictograms are used to identify the various hazards. The employee should expect to see the appropriate pictogram for the corresponding hazard class.
  - Explain that when there are similar precautionary statements, the one providing the most protective information will be included on the label.

**Training on the format of the SDS must include information on:**

- The standardized 16-section format, including the type of information found in the various sections
  - For example, instruct employees that under the new format, Section 8 (Exposure Controls/Personal Protection) will always contain information about exposure limits, engineering controls and ways to protect themselves, including personal protective equipment.
- How the information on the label is related to the SDS
  - For example, explain that the precautionary statements would be the same on the label and on the SDS.

OSHA requires employers to present information in a manner and language that their employees can understand. If employers customarily need to communicate work instructions or other workplace information to employees in a language other than English, they will also need to provide safety and health training to employees in the same manner. Similarly, if the employee's vocabulary is limited, the training must account for that limitation. If employees are not literate, telling them to read training materials will not satisfy the employer's training obligation.

# Label Elements

The revised HCS changes the existing Hazard Communication Standard from a performance-based standard to one that has more structured requirements for the labeling of chemicals. The revised standard requires that information about chemical hazards be conveyed on labels using quick visual notations to alert the user, providing immediate recognition of the hazards. Labels must also provide instructions on how to handle the chemical so that chemical users are informed about how to protect themselves.

The HCS now requires the following elements on labels of hazardous chemicals:

- **Name, address and telephone number** of the chemical manufacturer, importer or other responsible party.
- **Product identifier**—how the hazardous chemical is identified. This can be (but is not limited to) the chemical name, code number or batch number. The manufacturer, importer or distributor can decide the appropriate product identifier. The same product identifier must be both on the label and in section 1 of the SDS.
- **Pictograms**—graphic symbols used to communicate specific information about the hazards of a chemical. On hazardous chemicals being shipped or transported from a manufacturer, importer or distributor, the required pictograms consist of a red square frame set at a point with a black hazard symbol on a white background, sufficiently wide to be clearly visible. A square red frame set at a point without a hazard symbol is not a pictogram and is not permitted on the label.
- **Signal word**—used to indicate the relative level of severity of the hazard and alert the reader to a potential hazard on the label. There are only two words used as signal words: “Danger” and “Warning.” Within a specific hazard class, “Danger” is used for the more severe hazards and “Warning” is used for the less severe hazards. There will only be one signal word on the label no matter how many hazards a chemical may have. If one of the hazards warrants a “Danger” signal word and another warrants the signal word “Warning,” then only “Danger” should appear on the label.
- **Hazard statements**—describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard. For example: “Causes damage to kidneys through prolonged or repeated exposure when absorbed through the skin.” All of the applicable hazard statements must appear on the label. Hazard statements may be combined where appropriate to reduce redundancies and improve readability. The hazard statements are specific to the hazard classification categories, and chemical users should always see the same statement for the same hazards no matter what the chemical is or who produces it.
- **Precautionary statements**—describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or improper storage or handling. There are four types of precautionary statements: prevention (to minimize exposure); response (in case of accidental spillage or exposure, emergency response and first-aid); storage; and disposal. For example, a chemical presenting a specific target organ toxicity (repeated exposure) hazard would include the following on the label: “Do not breathe dust/fume/gas/mist/vapors/spray. Get medical advice/attention if you feel unwell. Dispose of contents/container in accordance with local/regional/national and international regulations.”

## Supplemental information (optional)

The label producer may provide additional instructions or information that it deems helpful. It may also list any hazards not otherwise classified under this portion of the label. This section must also identify the percentage of ingredient(s) of unknown acute toxicity when it is present in a concentration of  $\geq 1$  percent (and the classification is not based on testing the mixture as a whole). If an employer decides to include additional information regarding the chemical that is above and beyond what the standard requires, it may list this information as “supplementary information.” There is also no required format for how a workplace label must look and no particular format an employer has to use; however, it cannot contradict or detract from the required information.



# Pictograms

OSHA requires eight of the nine possible GHS pictograms to be used in communicating hazards. The ninth pictogram, Environmental, is under the jurisdiction of the Environmental Protection Agency in the United States.

## Pictograms and their corresponding hazards:

<p><b>Health Hazard</b></p>  <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive toxicity</li> <li>• Respiratory sensitizer</li> <li>• Target organ toxicity</li> <li>• Aspiration toxicity</li> </ul>	<p><b>Flame</b></p>  <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-heating</li> <li>• Emits flammable gas</li> <li>• Self-reactives</li> <li>• Organic peroxides</li> </ul>	<p><b>Exclamation Mark</b></p>  <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin sensitizer</li> <li>• Acute toxicity (harmful)</li> <li>• Narcotic effects</li> <li>• Respiratory tract irritant</li> <li>• Hazardous to ozone layer (non-mandatory)</li> </ul>
<p><b>Gas Cylinder</b></p>  <ul style="list-style-type: none"> <li>• Gases under pressure</li> </ul>	<p><b>Corrosion</b></p>  <ul style="list-style-type: none"> <li>• Skin corrosion/burns</li> <li>• Eye damage</li> <li>• Corrosive to metals</li> </ul>	<p><b>Exploding Bomb</b></p>  <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-reactives</li> <li>• Organic peroxides</li> </ul>
<p><b>Flame Over Circle</b></p>  <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<p><b>Environment*</b></p>  <ul style="list-style-type: none"> <li>• Aquatic toxicity</li> </ul> <p><i>*under EPA jurisdiction</i></p>	<p><b>Skull &amp; Crossbones</b></p>  <ul style="list-style-type: none"> <li>• Acute toxicity (fatal or toxic)</li> </ul>

# Sample Label

**Product Identifier**

**Pictograms**

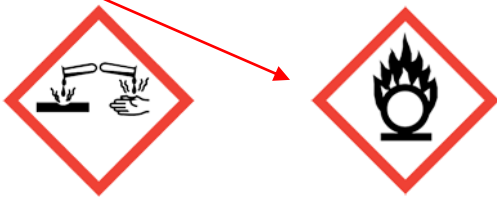
**Hazard Statements**

**Signal Word**

**Precautionary Statements**

**Name, address and telephone number** of the chemical manufacturer, importer or other responsible party

**OXI252**  
(disodiumflammy)  
CAS #: 111-11-11xx



**Danger**

May cause fire or explosion; strong oxidizer  
Causes severe skin burns and eye damage

Keep away from heat. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Wear protective neoprene gloves, safety goggles and face shield with chin guard. Wear fire/flame resistant clothing. Do not breathe dust or mists. Wash arms, hands and face thoroughly after handling. Store locked up. Dispose of contents and container in accordance with local, state and federal regulations.

**First aid**  
IF ON SKIN, HAIR OR CLOTHING: Immediately rinse any contaminated clothing and skin with plenty of water before removing clothes. Wash contaminated clothing before reuse.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present. Continue rinsing.  
IF INHALED: Remove person to fresh air and keep him or her comfortable.  
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call poison center.  
SPECIFIC TREATMENT: Treat with doctor-prescribed burn cream.

**Fire**  
In case of fire: Use water spray.  
In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Great Chemical Company  
55 Main Street, Anywhere, CT 064XX  
Telephone: 888-777-8888

# Labels: Employer Responsibilities

Employers are responsible for maintaining the labels on the containers, which include, but are not limited to, tanks, totes and drums. This means that labels must be maintained on chemicals in a manner that continues to be legible and so that the pertinent information (such as the hazards and directions for use) does not get defaced (e.g., fade or get washed off) or removed in any way.

The employer is not responsible for updating labels on shipped containers, even if the shipped containers are labeled under HazCom 1994. The employer must re-label items if the labels are removed or defaced. However, if the employer is aware of newly-identified hazards that are not disclosed on the label, the employer must ensure that the workers are aware of the hazards as discussed below under workplace labels.

## Workplace Labels

OSHA has not changed the general requirements for workplace labeling. Employers have the option to create their own workplace labels. They can either provide all of the required information that is on the label from the chemical manufacturer, or the product identifier and words, pictures, symbols or a combination thereof, which, in combination with other information immediately available to employees, provide specific information regarding the hazards of the chemicals.

If an employer has an in-plant or workplace system of labeling that meets the requirements of HazCom 1994, the employer may continue to use this system in the workplace as long as this system, in conjunction with other information immediately available to the employees, provides the employees with the information on all of the health and physical hazards of the hazardous chemical. This workplace labeling system may include signs, placards, process sheets, batch tickets, operating procedures and other such written materials to identify hazardous chemicals. Any of these labeling methods or a combination thereof may be used instead of a label from the manufacturer, importer or distributor as long as the label provides all of the required information. Workplace labels must be in English. Other languages may be added to the label if applicable.

Employers may use additional instructional symbols that are not included in OSHA's HCS pictograms on the workplace labels. An example of an instructional pictogram is a person with goggles, denoting that goggles must be worn while handling the given chemical. Including both types of pictograms on workplace labels is acceptable. The same is true if the employer wants to list environmental pictograms or PPE pictograms from the HMIS to identify protective measures for those handling the chemical.

Employers may continue to use rating systems such as National Fire Protection Association (NFPA) diamonds or HMIS requirements for workplace labels as long as they are consistent with the requirements of the Hazard Communication Standard and the employees have immediate access to the specific hazard information as discussed above. An employer using NFPA or HMIS labeling must, through training, ensure that its employees are fully aware of the hazards of the chemicals used.

If an employer transfers hazardous chemicals from a labeled container to a portable container that is only intended for immediate use by the employee who performs the transfer, no labels are required for the portable container.

# Safety Data Sheets

Under the revised Hazard Communication Standard, material safety data sheets (MSDS) will be called safety data sheets, or SDS. The information contained in the SDS is largely the same as the information in the MSDS; the major change is the format. HazCom 1994 did not specify a set order of information for the MSDS. The new SDS is required to be presented in a standardized 16-section format.

Sections 1 through 8 contain general information about the chemical, identification, hazards, composition, safe handling practices and emergency control measures (e.g., firefighting). Sections 9 through 11 and Section 16 contain other technical and scientific information, such as physical and chemical properties, stability and reactivity information, toxicological information, exposure control information and other information including the date of preparation or last revision. The SDS must also state that no applicable information was found when the preparer does not find relevant information for any required element.

The SDS must also contain Sections 12 through 15 to be consistent with the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS), but OSHA will not enforce the content of these sections because they concern matters handled by other agencies.

A description of all 16 sections of the SDS, along with their contents, is presented below.

## Section 1: Identification

This section identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier. The required information consists of:

- Product identifier used on the label and any other common names or synonyms by which the substance is known
- Name, address, phone number of the manufacturer, importer or other responsible party, and emergency phone number
- Recommended use of the chemical (e.g., a brief description of what it actually does, such as flame retardant) and any restrictions on use (including recommendations given by the supplier)

## Section 2: Hazard Identification

This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- The hazard classification of the chemical (e.g., flammable liquid, category)
- Signal word
- Hazard statement(s)
- Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (e.g., skull and crossbones, flame))
- Precautionary statement(s)
- Description of any hazards not otherwise classified
- For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity
  - Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s).

### Section 3: Composition/Information on Ingredients

This section identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures and all chemicals where a trade secret is claimed. The required information consists of:

#### Substances

- Chemical name
- Common name and synonyms
- Chemical Abstracts Service (CAS) number and other unique identifiers
- Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical

#### Mixtures

- The same information required for substances
- The chemical name and concentration (i.e., exact percentage) of all ingredients that are classified as health hazards and:
  - That are present above their cut-off/concentration limits or
  - That present a health risk below the cut-off/concentration limits
- The concentration (exact percentages) of each ingredient must be specified, except concentration ranges may be used in the following situations:
  - A trade secret claim is made;
  - There is batch-to-batch variation; or
  - The SDS is used for a group of substantially similar mixtures.

#### Chemicals where a trade secret is claimed

- A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required

### Section 4: First Aid Measures

This section describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical. The required information consists of:

- Necessary first-aid instructions by relevant routes of exposure (inhalation, skin and eye contact, and ingestion)
- Description of the most important symptoms or effects, and any symptoms that are acute or delayed
- Recommendations for immediate medical care and special treatment needed, when necessary

### Section 5: Firefighting Measures

This section provides recommendations for fighting a fire caused by the chemical. The required information consists of:

- Recommendations of suitable extinguishing equipment, and information about extinguishing equipment that is not appropriate for a particular situation
- Advice on specific hazards that develop from the chemical during the fire, such as any hazardous combustion products created when the chemical burns
- Recommendations on special protective equipment or precautions for firefighters

## Section 6: Accidental Release Measures

This section provides recommendations on the appropriate response to spills, leaks or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties or the environment. It may also include recommendations distinguishing between responses for large and small spills where the spill volume has a significant impact on the hazard. The required information may consist of recommendations for:

- Use of personal precautions (such as removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes and clothing
- Emergency procedures, including instructions for evacuations, consulting experts when needed and appropriate protective clothing
- Methods and materials used for containment (e.g., covering the drains and capping procedures)
- Cleanup procedures (e.g., appropriate techniques for neutralization, decontamination, cleaning or vacuuming; adsorbent materials; and/or equipment required for containment/clean up)

## Section 7: Handling and Storage

This section provides guidance on the safe handling practices and conditions for safe storage of chemicals. The required information consists of:

- Precautions for safe handling, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment and providing advice on general hygiene practices (e.g., eating, drinking and smoking in work areas is prohibited)
- Recommendations on the conditions for safe storage, including any incompatibilities
  - Provide advice on specific storage requirements (e.g., ventilation requirements)

## Section 8: Exposure Controls/Personal Protection

This section indicates the exposure limits, engineering controls and personal protective measures that can be used to minimize worker exposure. The required information consists of:

- OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) and any other exposure limit used or recommended by the chemical manufacturer, importer or employer preparing the safety data sheet, where available
- Appropriate engineering controls (e.g., use local exhaust ventilation, or use only in an enclosed system)
- Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPE) (e.g., appropriate types of eye, face, skin or respiratory protection needed based on hazards and potential exposure)
- Any special requirements for PPE, protective clothing or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves, and breakthrough time of the glove material)

## Section 9: Physical and Chemical Properties

This section identifies physical and chemical properties associated with the substance or mixture. The minimum required information consists of:

- Appearance (physical state, color, etc.)
- Upper/lower flammability or explosive limits
- Odor
- Vapor pressure
- Odor threshold
- Vapor density
- pH
- Relative density
- Melting point/freezing point
- Solubility(ies)
- Initial boiling point and boiling range
- Partition coefficient: n-octanol/water
- Flash point
- Auto-ignition temperature
- Evaporation rate
- Decomposition temperature
- Flammability (solid, gas)
- Viscosity

The SDS may not contain every item on the above list because information may not be relevant or is not available. When this occurs, a notation to that effect must be made for that chemical property. Manufacturers may also add other relevant properties, such as the dust deflagration index (Kst) for combustible dust, used to evaluate a dust's explosive potential.

## Section 10: Stability and Reactivity

This section describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into three parts: reactivity, chemical stability and other. The required information consists of:

### Reactivity

- Description of the specific test data for the chemical(s)
  - This data can be for a class or family of the chemical if such data adequately represent the anticipated hazard of the chemical(s), where available.

### Chemical stability

- Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions while in storage and being handled
- Description of any stabilizers that may be needed to maintain chemical stability
- Indication of any safety issues that may arise should the product change in physical appearance

### Other

- Indication of the possibility of hazardous reactions, including a statement whether the chemical will react or polymerize, which could release excess pressure or heat, or create other hazardous conditions
- A description of the conditions under which hazardous reactions may occur
- List of all conditions that should be avoided (e.g., static discharge, shock, vibrations or environmental conditions that may lead to hazardous conditions)
- List of all classes of incompatible materials (e.g., classes of chemicals or specific substances) with which the chemical could react to produce a hazardous situation
- List of any known or anticipated hazardous decomposition products that could be produced because of use, storage or heating (hazardous combustion products should also be included in Section 5 (Fire-Fighting Measures) of the SDS)

### Section 11: Toxicological Information

This section identifies toxicological and health effects information or indicates that such data are not available. The required information consists of:

- Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)
  - The SDS should indicate whether the information is unknown.
- Description of the delayed, immediate or chronic effects from short- and long-term exposure
- The numerical measures of toxicity (e.g., acute toxicity estimates such as the LD50 (median lethal dose)—the estimated amount [of a substance] expected to kill 50 percent of test animals in a single dose)
- Description of the symptoms
  - This description includes the symptoms associated with exposure to the chemical, including symptoms from the lowest to the most severe exposure.
- Indication of whether the chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions) or found to be a potential carcinogen by OSHA

### Section 12: Ecological Information (non-mandatory)

This section provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment. The information may include:

- Data from toxicity tests performed on aquatic and/or terrestrial organisms, where available (e.g., acute or chronic aquatic toxicity data for fish, algae, crustaceans and plants; toxicity data on birds, bees, plants)
- Whether there is a potential for the chemical to persist and degrade in the environment either through biodegradation or other processes, such as oxidation or hydrolysis
- Results of tests of bioaccumulation potential, making reference to the octanol-water partition coefficient (Kow) and the bioconcentration factor (BCF), where available
- The potential for a substance to move from the soil to the groundwater (indicate results from adsorption studies or leaching studies)
- Other adverse effects (e.g., environmental fate, ozone layer depletion potential, photochemical ozone creation potential, endocrine disrupting potential and/or global warming potential)

### Section 13: Disposal Considerations (non-mandatory)

This section provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS. The information may include:

- Description of appropriate disposal containers to use
- Recommendations of appropriate disposal methods to employ
- Description of the physical and chemical properties that may affect disposal activities
- Language discouraging sewage disposal
- Any special precautions for landfills or incineration activities



#### Section 14: Transport Information (non-mandatory)

This section provides guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail or sea. The information may include:

- UN number (i.e., four-figure identification number of the substance)
- UN proper shipping name
- Transport hazard class(es)
- Packing group number, if applicable, based on the degree of hazard
- Environmental hazards (e.g., identify whether it is a marine pollutant according to the International Maritime Dangerous Goods Code (IMDG Code))
- Guidance on transport in bulk (according to Annex II of MARPOL 73/783 and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code (IBC Code))
- Any special precautions which an employee should be aware of or needs to comply with, in connection with transport or conveyance either within or outside their premises (indicate when information is not available)

#### Section 15: Regulatory Information (non-mandatory)

This section identifies any safety, health and environmental regulations specific for the product that are not indicated anywhere else on the SDS. The information may include:

- Any national and/or regional regulatory information of the chemical or mixtures (including any OSHA, Department of Transportation, Environmental Protection Agency or Consumer Product Safety Commission regulations)

#### Section 16: Other Information

This section indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information may also be included here.

# SDS: Employer Responsibilities

Employers must ensure that the SDSs are readily accessible to employees for all hazardous chemicals in their workplace. This may be done in many ways. For example, employers may keep the SDSs in a binder or on computers as long as the employees have immediate access to the information without leaving their work area and a back-up is available for rapid access to the SDS in the case of a power outage or other emergency. Furthermore, employers may want to designate a person(s) responsible for obtaining and maintaining the SDSs. If the employer does not have an SDS, the employer or designated person(s) should contact the manufacturer to obtain one.

# GHS/HCS Frequently Asked Questions

## **Q. What is the Globally Harmonized System?**

A. The Globally Harmonized System (GHS) is an international approach to hazard communication, providing agreed criteria for classification of chemical hazards and a standardized approach to label elements and safety data sheets. The GHS was negotiated in a multi-year process by hazard communication experts from many different countries, international organizations and stakeholder groups. It is based on major existing systems around the world, including OSHA's Hazard Communication Standard and the chemical classification and labeling systems of other U.S. agencies.

The result of this negotiation process is the United Nations' document entitled "Globally Harmonized System of Classification and Labeling of Chemicals," commonly referred to as "The Purple Book." This document provides harmonized classification criteria for health, physical and environmental hazards of chemicals. It also includes standardized label elements that are assigned to these hazard classes and categories, and provides the appropriate signal words, pictograms and hazard and precautionary statements to convey the hazards to users. A standardized order of information for safety data sheets is also provided.

## **Q. Why did OSHA decide to modify the Hazard Communication Standard to adopt the GHS?**

A. OSHA has modified the Hazard Communication Standard (HCS) to adopt the GHS to improve safety and health of workers through more effective communications on chemical hazards. Since it was first promulgated in 1983, the HCS has provided employers and employees extensive information about the chemicals in their workplaces. The original standard is performance-oriented, allowing chemical manufacturers and importers to convey information on labels and material safety data sheets in whatever format they choose. While the available information has been helpful in improving employee safety and health, a more standardized approach to classifying the hazards and conveying the information will be more effective, and provide further improvements in American workplaces. The GHS provides such a standardized approach, including detailed criteria for determining what hazardous effects a chemical poses, as well as standardized label elements assigned by hazard class and category. This will enhance both employer and worker comprehension of the hazards, which will help to ensure appropriate handling and safe use of workplace chemicals. In addition, the safety data sheet requirements establish an order of information that is standardized. The harmonized format of the safety data sheets will enable employers, workers, health professionals and emergency responders to access the information more efficiently and effectively, thus increasing their utility.

Adoption of the GHS in the United States and around the world will also help to improve information received from other countries—since the United States is both a major importer and exporter of chemicals, American workers often see labels and safety data sheets from other countries. The diverse and sometimes conflicting national and international requirements can create confusion among those who seek to use hazard information effectively. For example, labels and safety data sheets may include symbols and hazard statements that are unfamiliar to readers or not understood well. Containers may be labeled with such a large volume of information that important statements are not easily recognized. Given the differences in hazard classification criteria, labels may also be incorrect when used in other countries. If countries around the world adopt the GHS, these problems will be minimized, and chemicals crossing borders will have consistent information, thus improving communication globally.

## **Q. Why must training be conducted prior to the compliance effective date?**

A. OSHA is requiring that employees are trained on the new label elements (i.e., pictograms, hazard statements, precautionary statements and signal words) and SDS format by Dec. 1, 2013, while full compliance with the final rule will begin in 2015. OSHA believes that American workplaces will soon begin to receive labels and SDSs that are consistent with the GHS, since many American and foreign chemical manufacturers have already begun to produce HazCom 2012/GHS-compliant labels and SDSs. It is important to ensure that when employees begin to see the new labels and SDSs in their workplaces, they will be familiar with them, understand how to use them and access the information effectively.

**Q. What is the phase-in period in the revised Hazard Communication Standard?**

A. The table below summarizes the phase-in dates required under the revised Hazard Communication Standard (HCS):

Effective Completion Date	Requirement(s)	Who
Dec. 1, 2013	Train employees on the new label elements and safety data sheet (SDS) format.	Employers
June 1, 2015  Dec. 1, 2015	Compliance with all modified provisions of this final rule, except:  The distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label	Chemical manufacturers, importers, distributors and employers
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.	Employers
Transition period to the effective completion dates noted above	May comply with either 29 CFR 1910.1200 (the final standard), the current standard or both.	Chemical manufacturers, importers, distributors and employers

During the phase-in period, employers are required to be in compliance with either the existing HCS or the revised HCS, or both. OSHA recognizes that hazard communication programs will go through a period of time where labels and SDSs under both standards will be present in the workplace. This will be considered acceptable, and employers are not required to maintain two sets of labels and SDSs for compliance purposes.

**Q. What are the major changes to the Hazard Communication Standard?**

A. The three major areas of change are in hazard classification, labels and safety data sheets.

- **Hazard classification:** The definitions of hazard have been changed to provide specific criteria for classification of health and physical hazards, as well as classification of mixtures. These specific criteria will help to ensure that evaluations of hazardous effects are consistent across manufacturers, and that labels and safety data sheets are more accurate as a result.
- **Labels:** Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram and hazard statement for each hazard class and category. Precautionary statements must also be provided.
- **Safety data sheets:** SDSs will now have a specified 16-section format.

The GHS does not include harmonized training provisions, but recognizes that training is essential for an effective hazard communication approach. The revised Hazard Communication Standard (HCS) requires that workers be re-trained within two years of the publication of the final rule to facilitate recognition and understanding of the new labels and safety data sheets.

**Q. What Hazard Communication Standard provisions are unchanged in the revised HCS?**

A. The revised Hazard Communication Standard (HCS) is a modification to the existing standard. The parts of the standard that did not relate to the GHS (such as the basic framework, scope and exemptions) remained largely unchanged. There have been some modifications to terminology in order to align the revised HCS with language used in the GHS. For example, the term "hazard determination" has been changed to "hazard classification," and "material safety data sheet" was changed to "safety data sheet."

**Q. How will chemical hazard evaluation change under the revised Hazard Communication Standard?**

A. Under both the current Hazard Communication Standard (HCS) and the revised HCS, an evaluation of chemical hazards must be performed considering the available scientific evidence concerning such hazards. Under the current HCS, the hazard determination provisions have definitions of hazard and the evaluator determines whether or not the data on a chemical meet those definitions. It is a performance-oriented approach that provides parameters for the evaluation, but not specific, detailed criteria. The hazard classification approach in the revised HCS is quite different. The revised HCS has specific criteria for each health and physical hazard, along with detailed instructions for hazard evaluation and determinations as to whether mixtures or substances are covered. It also establishes both hazard classes and hazard categories—for most of the effects, the classes are divided into categories that reflect the relative severity of the effect. The current HCS does not include categories for most of the health hazards covered, so this new approach provides additional information that can be related to the appropriate response to address the hazard. OSHA has included the general provisions for hazard classification in paragraph (d) of the revised rule, and added extensive appendices (Appendices A and B) that address the criteria for each health or physical effect.

**Q. Can I use a black border on pictograms for domestic shipment?**

A. Under the revised Hazard Communication Standard (HCS), pictograms must have red borders. OSHA believes that the use of the red frame will increase recognition and comprehensibility. Therefore, the red frame is required regardless of whether the shipment is domestic or international.

**Q. Will OSHA allow blank red borders?**

A. The revised Hazard Communication Standard (HCS) requires that all red borders printed on the label have a symbol printed inside it. If OSHA were to allow blank red borders, workers may be confused about what they mean and concerned that some information is missing. OSHA has determined that prohibiting the use of blank red borders on labels is necessary to provide the maximum recognition and impact of warning labels and to ensure that users do not get desensitized to the warnings placed on labels.

**Q. When must label information be updated?**

A. In the revised Hazard Communication Standard (HCS), OSHA is lifting the stay on enforcement regarding the provision to update labels when new information on hazards becomes available. Chemical manufacturers, importers, distributors or employers that become newly aware of any significant information regarding the hazards of a chemical shall revise the labels for the chemical within **six months** of becoming aware of the new information, and shall ensure that labels on containers of hazardous chemicals shipped after that time contain the new information. If the chemical is not currently produced or imported, the chemical manufacturer, importer, distributor or employer shall add the information to the label before the chemical is shipped or introduced into the workplace again.

**Q. How will workplace labeling provisions be changing under the revised Hazard Communication Standard?**

A. The current standard provides employers with flexibility regarding the type of system to be used in their workplaces, and OSHA has retained that flexibility in the revised Hazard Communication Standard (HCS). Employers may choose to label workplace containers either with the same label that would be on shipped containers for the chemical under the revised rule, or with label alternatives that meet the requirements for the standard. Alternative labeling systems such as the National Fire Protection Association (NFPA) 704 Hazard Rating and the Hazardous Material Information System (HMIS) are permitted for workplace containers. However, the information supplied on these labels must be consistent with the revised HCS, e.g., no conflicting hazard warnings or pictograms.

**Q. Will TLVs be required on the Safety Data Sheet (SDS)?**

A. OSHA is retaining the requirement to include the American Conference of Government Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) on the safety data sheet (SDS) in the revised Standard. OSHA finds that requiring TLVs on the SDS will provide employers and employees with useful information to help them assess the hazards presented by their workplaces. In addition to TLVs, OSHA permissible exposure limits (PELs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, are also required.

**Q. May the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) lists be used to make carcinogen classifications?**

A. In the revised Hazard Communication Standard (HCS), OSHA has provided classifiers with the option of relying on the classification listings of IARC and NTP to make classification decisions regarding carcinogenicity, rather than applying the criteria themselves. OSHA believes that this will make classification easier for classifiers, as well as lead to greater consistency. In addition, OSHA has provided in non-mandatory Appendix F of the revised rule, guidance on hazard classification for carcinogenicity. Part A of Appendix F includes background guidance provided by GHS based on the Preamble of the IARC "Monographs on the Evaluation of Carcinogenic Risks to Humans" (2006). Part B provides IARC classification information. Part C provides background guidance from the National NTP "Report on Carcinogens" (RoC), and Part D is a table that compares GHS carcinogen hazard categories to carcinogen classifications under IARC and NTP, allowing classifiers to be able to use information from IARC and NTP RoC carcinogen classifications to complete their classifications under the GHS, and thus the HCS.

**Q. Will the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) classifications be required on the Safety Data Sheet (SDS)?**

A. OSHA has retained the requirement to include IARC and NTP classifications on safety data sheets (SDSs). Therefore, if a chemical is listed as a carcinogen by either IARC or NTP, it must be noted on the SDS. Additionally, if OSHA finds a chemical to be a carcinogen, it must be noted on the SDS as well.

**Q. How has OSHA addressed hazards covered under the current Hazard Communication Standard that have not been addressed by the GHS?**

A. In the Notice of Proposed Rulemaking (NPRM), OSHA proposed to include hazards currently covered under the Hazard Communication Standard (HCS) that have yet to be addressed by the GHS (OSHA provided several examples, such as simple asphyxiants and combustible dust) in a separate category called "Unclassified Hazards." In response to comments from the regulated community, OSHA has renamed the category to "Hazards Not Otherwise Classified (HNOC)" to minimize confusion. In the final HCS, HNOC hazards will not be required to be disclosed on the label but will be required to be disclosed in section 2 of the Safety Data Sheet (SDS). This reflects how GHS recommends these hazards should be disclosed. Chemical manufacturers and importers are expected to assess these hazards when they are conducting their hazard evaluation of physical and health hazards. A new or separate evaluation is not required. Also in the final standard, in response to comments, OSHA has removed pyrophoric gases, simple asphyxiants and combustible dust from the HNOC hazard category and has addressed these chemicals individually (see question below for more information on each hazard).

**Q. How has OSHA addressed pyrophoric gases, simple asphyxiants and combustible dust?**

A. In the revised Hazard Communication Standard (HCS), OSHA has added pyrophoric gases, simple asphyxiants and combustible dust to the definition of "hazardous chemical." OSHA has also added definitions to the revised HCS for pyrophoric gases and simple asphyxiants, and provided guidance on how to define combustible dust for the purposes of complying with the HCS.

**Pyrophoric gases**

OSHA has retained the definition for pyrophoric gases from the current HCS. Pyrophoric gases must be addressed both on container labels and SDSs. OSHA has provided label elements for pyrophoric gases which include the signal word "danger" and the hazard statement "catches fire spontaneously if exposed to air."

**Simple asphyxiants**

OSHA has revised the definition of simple asphyxiants that was proposed in the Notice of Proposed Rulemaking (NPRM) as a result of comments from the regulated community. In the final HCS, simple asphyxiants must be labeled where appropriate, and be addressed on SDSs. OSHA has provided label elements for simple asphyxiants which include the signal word "warning" and the hazard statement "may displace oxygen and cause rapid suffocation."

**Combustible dust**

OSHA has **not** provided a definition for combustible dust to the final HCS given ongoing activities in the specific rulemaking, as well as activities in the United Nations Sub-Committee of Experts on the GHS (UN/SCEGHS). However, guidance is being provided through existing documents, including the Combustible Dust National Emphasis Program Directive CPL 03-00-008, which includes an operative definition, as well as information about current responsibilities in this area. In addition, there are a number of voluntary industry consensus standards (particularly those of the NFPA) that address combustible dust.

In the final HCS, combustible dust hazards must be addressed on labels and SDSs. Label elements are provided for combustible dust in the final HCS and include the signal word "warning" and the hazard statement "May form combustible dust concentrations in the air".

For chemicals in a solid form that do not present a combustible dust hazard, but may form combustible dusts while being processed in normal downstream uses, paragraph (f)(4) of the HCS allows the chemical manufacturer some flexibility in labeling requirements. The manufacturer or importer may transmit the label to the customer at the time of the initial shipment, but the label does not need to be included with subsequent shipments unless it changes. This provides the needed information to the downstream users on the potential hazards in the workplace, while acknowledging that the solid metal or other materials do not present the same hazards that are produced when these materials are processed under normal conditions of use.

**Q: What are the estimated benefits attributable to the revised Hazard Communication Standard?**

A: OSHA expects that the modifications to the Hazard Communication Standard (HCS) will result in increased safety and health for the affected employees and reduce the numbers of accidents, fatalities, injuries and illnesses associated with exposures to hazardous chemicals. The GHS revisions to the HCS standard for labeling and safety data sheets would enable employees exposed to workplace chemicals to more quickly obtain and to more easily understand information about the hazards associated with those chemicals. In addition, the revisions to the HCS are expected to improve the use of appropriate exposure controls and work practices that can reduce the safety and health risks associated with exposure to hazardous chemicals.

OSHA estimates that the revised HCS will result in the prevention of 43 fatalities and 585 injuries and illnesses (318 non-lost-workday injuries and illnesses, 203 lost-workday injuries and illnesses and 64 chronic illnesses) annually. The monetized value of this reduction in occupational risks is an estimated \$250 million a year.

OSHA estimates that the revised HCS will result in savings of \$475.2 million from productivity improvements for health and safety managers and logistics personnel, \$32.2 million during periodic updating of SDSs and labels and \$285.3 million from simplified hazard communication training.

OSHA anticipates that, in addition to safety and health benefits, the revised HCS will result in three types of productivity benefits: (1) for chemical manufacturers, because they will need to produce fewer SDSs in future years; (2) for employers, in providing training to new employees as required by the existing OSHA HCS through the improved consistency of the labels and SDSs; (3) for firms engaging in, or considering engaging in, international trade.

**Q. I understand that the United Nations revises the GHS every two years. How will OSHA manage and communicate changes to the Hazard Communication Standard?**

A. It is expected that the GHS will be a living document and is expected to remain up to date and relevant; therefore, further changes may be adopted on a two-year cycle. Most of the recent updates have been clarification of text. However, OSHA anticipates that future updates of the Hazard Communication Standard (HCS) may be necessary and can be done through various rulemaking options, including:

- **Technical updates** for minor terminology changes;
- **Direct final rules** for text clarification; and
- **Notice and comment rulemaking** for more substantive or controversial updates, such as additional criteria or changes in health or safety hazard classes or categories.

## **Employee Training Resources**





## Labeling Under GHS

OSHA's modification of the Hazard Communication Standard (HCS) to adopt the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) will result in a number of changes to labeling requirement in order to more accurately communicate chemical dangers.

The revised HCS specifies that the following information is to be provided on the label for each hazard class and category:

- **Product Identifier:** The chemical's name and a list of the substance(s) it contains.
- **Name, address and telephone number** of the chemical's manufacturer or supplier.
- **Pictogram:** A symbol plus other graphic elements, such as a border, background pattern, or color that conveys specific information about the dangers of a chemical. Each pictogram consists of a different symbol on a white background within a red square frame set on a point (i.e. a red diamond). There are nine pictograms under the GHS. However, only eight pictograms are required by OSHA.
- **Precautionary Statement:** One or more phrases that describe recommended measures to be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling of a hazardous chemical.
- **Signal words:** A single word used to indicate the relative level of severity of the hazard and alert the reader to a potential hazard on the label. The signal words used are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for less severe hazards.
- **Hazard Statement:** A statement assigned to a hazard class and category that describes the nature of the hazard(s) a chemical presents. Each hazard statement has designated a code to help for reference purposes, but the actual phrasing must appear on the label.

In the revised HCS, OSHA has retained the flexibility regarding the type of system employers choose to use in their workplace. Employers may choose to label workplace containers either with the same label that would be on shipped containers for the chemical under the revised rule, or with label alternatives that meet the requirements for the standard. Alternative labeling systems such as the National Fire Protection Association (NFPA) 704 Hazard Rating and the Hazardous Material Information System (HMIS) are permitted for workplace containers. However, the information supplied on these labels must be consistent with the revised HCS, e.g., no conflicting hazard warnings or pictograms. Eastern Mennonite University will provide additional training to employees if any alternative labeling systems are used in our workplace.



## Sample Label

**Pictograms**

**Product Identifier**

**OXI252**  
(disodiumflammy)  
CAS #: 111-11-11xx

**Hazard Statements**

**Danger**

**Signal Word**

May cause fire or explosion; strong oxidizer  
Causes severe skin burns and eye damage

**Precautionary Statements**

Keep away from heat. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Wear protective neoprene gloves, safety goggles and face shield with chin guard. Wear fire/flame resistant clothing. Do not breathe dust or mists. Wash arms, hands and face thoroughly after handling. Store locked up. Dispose of contents and container in accordance with local, state and federal regulations

**First aid:**  
IF ON SKIN (or hair) or clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash contaminated clothing before reuse.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call poison center.  
Specific Treatment: Treat with doctor-prescribed burn cream.

**Fire:**  
In case of fire: Use water spray. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion

Great Chemical Company  
55 Main Street, Anywhere, CT 064XX  
Telephone (888) 777-8888

**Name, Address and Telephone Number** of the chemical manufacturer, importer or other responsible party












# TARGET ON SAFETY

## Pictograms Under GHS

As part of the changes resulting from OSHA's modification of the Hazard Communication Standard (HCS) to adopt the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), standardized pictograms will be a required on all chemical labels.

Understandable in any language, pictograms are a universal way to warn of health, physical and environmental hazards. OSHA requires 8 of the 9 possible GHS pictograms to be used in communicating hazards. The ninth pictogram, Environmental, is under the jurisdiction of the Environmental Protection Agency in the United States.

Pictograms are denoted by red frames, which are required regardless of whether the shipment is domestic or international. OSHA requires that all red borders printed on the label have a pictogram printed inside it, as blank red borders could cause confusion and concern that some information is missing. For your own safety, familiarize yourself with the potential hazards associated with each pictogram.

<b>Health Hazard</b>  <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive toxicity</li> <li>• Respiratory sensitizer</li> <li>• Target organ toxicity</li> <li>• Aspiration toxicity</li> </ul>	<b>Flame</b>  <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-heating</li> <li>• Emits flammable gas</li> <li>• Self-reactives</li> <li>• Organic peroxides</li> </ul>	<b>Exclamation Mark</b>  <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin sensitizer</li> <li>• Acute toxicity (harmful)</li> <li>• Narcotic effects</li> <li>• Respiratory tract irritant</li> <li>• Hazardous to ozone layer (non-mandatory)</li> </ul>
<b>Gas Cylinder</b>  <ul style="list-style-type: none"> <li>• Gases under pressure</li> </ul>	<b>Corrosion</b>  <ul style="list-style-type: none"> <li>• Skin Corrosion/ burns</li> <li>• Eye damage</li> <li>• Corrosive to metals</li> </ul>	<b>Exploding Bomb</b>  <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-reactives</li> <li>• Organic peroxides</li> </ul>
<b>Flame Over Circle</b>  <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<b>Environment (EPA jurisdiction)</b>  <ul style="list-style-type: none"> <li>• Aquatic toxicity</li> </ul>	<b>Skull &amp; Crossbones</b>  <ul style="list-style-type: none"> <li>• Acute toxicity (fatal or toxic)</li> </ul>



# GHS Standard for Safety Data Sheets (SDS)

## Introduction

On March 20, 2012, OSHA issued a new regulation changing the current Hazard Communication Standard (HCS) to conform to the Global Harmonized System of Classifying and Labeling Chemicals (GHS). GHS was developed by the United Nations to give workers worldwide the right to understand the dangers of the chemicals they work with.

What does this mean for you? Adopting GHS will largely affect the labels and safety data sheets (SDS) that are required for the hazardous materials we work with. Chemical safety in the workplace is a priority. Although we work with potentially hazardous materials on a regular basis, we can maintain a safe working environment if we use the chemicals as they were intended and follow necessary safety precautions. As your employer, we must ensure that SDSs are readily accessible to you. As we transition to GHS, we will train staff working with chemicals where to access safety information and how to safely handle hazardous materials used in the workplace.

## Safety Data Sheets (SDS) Changes

Under GHS, material safety data sheets (MSDS) will be called safety data sheets, or SDS. SDSs provide workers with procedures for handling or working with a hazardous substance in a safe manner. This includes instructions for safe use and potential hazards associated with a particular material or product. An SDS should provide complete information about the chemical product that allows employers and workers to obtain relevant and accurate information.

### *Hazard Classifications*

Under the new GHS rule, all hazards will be classified according to specific, detailed criteria. This offers us less flexibility than we had in the past for classifying materials. The revised SDSs use three hazard classifications:

- Health hazards (10 categories)
- Physical hazards (16 categories)
- Environmental hazards (one category)

### *New SDS Format*

The old HazCom standard indicated what information should be on the MSDS, but did not dictate the format or the order in which the information needed to be presented. The new SDS contains the same content as the 16 sections from the current MSDS, but now the new format and organization of these sections are required. The major difference between the current MSDS and the revised standard is Sections 2 and 3 are switched.

## Safety Data Sheet Sections

**Section 1, Identification** includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

**Section 2, Hazard(s) identification** includes all hazards regarding the chemical; required label elements.

**Section 3, Composition/information on ingredients** includes information on chemical ingredients; trade secret claims.

**Section 4, First-aid measures** includes important symptoms/ effects, acute, delayed; required treatment.

**Section 5, Fire-fighting measures** lists suitable extinguishing techniques, equipment; chemical hazards from fire.

**Section 6, Accidental release measures** lists emergency procedures; protective equipment; proper methods of containment and cleanup.

**Section 7, Handling and storage** lists precautions for safe handling and storage, including incompatibilities.

**Section 8, Exposure controls/personal protection** lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).

**Section 9, Physical and chemical properties** lists the chemical's characteristics.

**Section 10, Stability and reactivity** lists chemical stability and possibility of hazardous reactions.

**Section 11, Toxicological information** includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

**Section 12, Ecological information\***

**Section 13, Disposal considerations\***

**Section 14, Transport information\***

**Section 15, Regulatory information\***

**Section 16, Other information**, includes the date of preparation or last revision

# WHAT DO YOU KNOW ABOUT SAFETY?

## GHS Quiz

- 1) A signal word is ...?
  - a) The same as a pictogram.
  - b) Used to indicate the relative level of severity of the hazard.
  - c) Used to alert the reader to a potential hazard.
  - d) Both B and C.
- 2) The two signal words that can appear on labels are...?
  - a) Stop and Go
  - b) Danger and Extreme Danger
  - c) Warning and Danger
  - d) Happy and Sad
- 3) There will only be one signal word on the label no matter how many hazards a chemical may have.
  - a) True
  - b) False
- 4) Within a specific hazard class, the signal word used for more severe hazards is...?
  - a) Extreme Danger
  - b) Danger
  - c) Warning
  - d) Stop
- 5) Which of the following is **not** an example of a product identifier?
  - a) Chemical name
  - b) Code Number
  - c) Batch Number
  - d) Pictogram
- 6) If a chemical has multiple hazards, there may be more than one pictogram on the label?
  - a) True. Multiple pictograms may be used to identify the various hazards.
  - b) False. Labels will never have more than one pictogram.
- 7) In what ways might an employee use the information on the labels?
  - a) The information on the label can be used to ensure proper storage of hazardous chemicals.
  - b) The information on the label can be used to quickly locate information on first aid.
  - c) The information on the label can be used to help employees protect themselves from chemical hazards in the workplace.
  - d) All of the above.



# WHAT DO YOU KNOW ABOUT SAFETY?

- 8) Hazard statements...?
  - a) Are not required on the new labels.
  - b) Must be in the shape of a square and include a black hazard symbol on a white background.
  - c) Describe the nature of the hazard(s) of a chemical, including, when appropriate, the degree of hazard.
  - d) Can be ignored if you have previously worked with the chemical.
- 9) The name, address and phone number of the chemical manufacturer, distributor or importer must appear on the label.
  - a) True
  - b) False
- 10) Pictograms must be in the shape of a square set at a point and include a black hazard symbol on a white background with a red frame.
  - a) True
  - b) False
- 11) Under the revised Hazard Communication Standard, Material Safety Data Sheets (MSDS) will be known as...?
  - a) Material Safety Data Sheets (MSDS)
  - b) Safety Danger Sheets (SDS)
  - c) Safety Data Sheets (SDS)
  - d) Safety Designation Sheets (SDS)
- 12) How many sections are contained on a SDS?
  - a) 6
  - b) 12
  - c) 16
  - d) 20
- 13) Precautionary statements will be the same on the chemical labels and on the SDS?
  - a) True
  - b) False



# WHAT DO YOU KNOW ABOUT SAFETY?

## GHS Quiz: Answer Key

- 1) D
- 2) C
- 3) A - True
- 4) B
- 5) D
- 6) A
- 7) D
- 8) C
- 9) A - True
- 10) A - True
- 11) C
- 12) C
- 13) A - True



# WHAT DO YOU KNOW ABOUT SAFETY?

## Label Matching Quiz

**B** → **A**

**C** → **E**

**D** →

**F** →

**OXI252**  
(disodiumflammy)  
CAS #: 111-11-11xx

**Danger**

May cause fire or explosion; strong oxidizer  
Causes severe skin burns and eye damage

Keep away from heat. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Wear protective neoprene gloves, safety goggles and face shield with chin guard. Wear fire/flame resistant clothing. Do not breathe dust or mists. Wash arms, hands and face thoroughly after handling. Store locked up. Dispose of contents and container in accordance with local, state and federal regulations

Great Chemical Company  
55 Main Street, Anywhere, CT 064XX  
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Match each letter in the sample label above with its corresponding label element below:

1. Hazard Statement \_\_\_\_\_
2. Signal word \_\_\_\_\_
3. Product Identifier \_\_\_\_\_
4. Pictogram \_\_\_\_\_
5. Name, Address and Telephone Number of Supplier \_\_\_\_\_
6. Precautionary Statement \_\_\_\_\_



# WHAT DO YOU KNOW ABOUT SAFETY?

## Label Matching Quiz: Answer Key

- 1) C
- 2) E
- 3) A
- 4) B
- 5) F
- 6) D

# WHAT DO YOU KNOW ABOUT SAFETY?

## Pictograms Quiz

Match each pictogram with the hazard(s) it describes.

### Pictograms:



### Hazards:

- A. Explosives  
Self-reactives  
Organic peroxides
- B. Acute toxicity (fatal or toxic)
- C. Carcinogen  
Mutagenicity  
Reproductive toxicity  
Respiratory sensitizer  
Target organ toxicity  
Aspiration toxicity
- D. Skin Corrosion/ burns  
Eye damage  
Corrosive to metals
- E. Flammables  
Pyrophorics  
Self-heating  
Emits flammable gas  
Self-reactives  
Organic peroxides
- F. Gases under pressure
- G. Irritant (skin and eye)  
Skin sensitizer  
Acute toxicity (harmful)  
Narcotic effects  
Respiratory tract irritant  
Hazardous to ozone layer (non-mandatory)
- H. Oxidizers
- I. Aquatic toxicity



# WHAT DO YOU KNOW ABOUT SAFETY?

## Pictograms Quiz: Answer Key

- 1) C
- 2) E
- 3) G
- 4) F
- 5) D
- 6) A
- 7) H
- 8) I
- 9) B